

## ABSTRACT OF THE DISCLOSURE

An electronic HEMD determines the optimum balance between gas cooling and heat exchanger pressure loss, for any given operating condition, and adjusts the gas flow rate through the exchanger accordingly, to yield the maximum net power savings (and thereby energy savings) afforded by the exchanger. Maintaining the optimum balance between cooling and exchanger pressure loss reduces the amount of energy required to transport a given volume of gas through a pipeline and thereby increases the transmission efficiency of the gas pipeline system. A method of operating a heat exchanger on a natural gas transmission pipeline using a control algorithm that in turn controls the position of a heat exchanger bypass valve. The current operating conditions of the upstream compressor and gas cooling system are continually monitored for any changes and the control algorithm determines, the optimum flow through the heat exchanger and initiates a command signal to the exchanger bypass valve operator to move the bypass valve and thereby increase or decrease the gas flow rate through the exchanger, as required, until the optimum balance between gas cooling and heat exchanger pressure loss has been achieved.